The following draft terms of registration apply to XtendiMax with VaporGrip Technology (EPA File Symbol 264-RERN):

NOTE to Bayer – there are the items we are most interested in, as reflected in the edits and comments below. Please address:

- Notifying extension agents of resistance (suspected or confirmed, but definitely confirmed)
- Bayer actively seeking out information on confirmation vs. passively receiving
- Seed stewardship – providing information on proper use of OTT along with the seed, as well as resistance information.
- Use of Multiple MOA, especially in areas with confirmed resistance.
- Continue to investigate the lack of performance/suspected resistance within a state for a given species.
- Revise resistance management plans/BMP to address new cases of resistance as appropriate (e.g., new regional cases of resistance).
- Add concept of how antagonism of dicamba and certain herbicides can lead to lack of performance issues. Include antagonism as part of training materials and annual reporting

Herbicide Resistance Management Plan

2. You must maintain, update and follow an Herbicide Resistance Management Plan (HRM) as described in Appendix D regarding ~~grower agreements,~~ field detection and remediation, education, evaluation, reporting, and best management practices (BMPs).

Commented [A1]: From Kimberly To Bayer: why this deletion?

Appendix D

HERBICIDE RESISTANCE MANAGEMENT PLAN

Bayer CropScience LP must develop a herbicide resistance management plan that includes all of the following elements:

A. Field Detection and Remediation Components:

1. Update and implement an education program for growers, as set forth under the "Educational / Informational Component," below, that identifies appropriate best management practices (BMPs), as set forth under the "Best Management Practices (BMPs) Component," below, to ~~avoid,~~ delay, contain, and/or control weed resistance. This plan must convey to growers the importance of complying with BMPs and addressing resistance concerns.
2. If any grower or user informs you of a lack of herbicide efficacy, then you or your representative must (unless denied access by the grower) evaluate the field for "likely resistance" to XtendiMax with VaporGrip Technology for each specific species for which lack of herbicide efficacy is reported by applying the criteria set forth in Norsworthy, *et al.*, "Reducing the Risks of Herbicide Resistance: Best Management Practices and Recommendations," Weed Science 2012 Special Issue: 31–62 (*hereinafter* "Norsworthy criteria")[1] in each specific state. If denied access, Bayer must document this denial of access and provide records on request, including the location and contact information. ~~If denied access Bayer must notify EPA immediately, providing the location for which access was denied and contact information for the grower.~~ Make available to EPA upon request ~~upon.~~
3. If Bayer is informed of confirmed resistance to dicamba ~~is confirmed~~ in a specific state for a specific weed species, then Bayer must immediately report such confirmation to EPA ~~and state and extension services~~. After that time, Bayer need no longer need to confirm ~~investigate~~ new reports of lack of herbicide efficacy regarding that specific species in that specific state, but Bayer must continue to comply with A.2. above in regard to any other weed species in any such state and develop, submit to EPA, and implement a strategy to address the ongoing resistance. In addition, for each grower or user in any jurisdiction who reports a lack of efficacy, Bayer must continue to ~~provide~~ make available stewardship information about resistance management to the grower or user throughout their use of this product, regardless of whether resistance is confirmed.
4. Bayer must keep records of all field evaluations for "likely resistance" for a period of 3 years and ~~submit these records to EPA for awareness~~make such copies available to EPA upon request.
5. In any case described in A.2. above where one or more of the Norsworthy criteria are met for a weed species not already confirmed to be resistant to dicamba in that specific state, Bayer must:

   Provide the ~~grower, user, and landowner, if the landowner is accessible, with~~grower with specific information and recommendations to control and contain likely resistant weeds, including retreatment and/or other non-chemical controls, as appropriate. ~~If requested by the grower or user, Bayer or its agent must become actively involved in implementation of weed control measures' and Bayer must provide to EPA upon request any written agreement provided to applicable customers.~~ At the time of the initial determination that one or more of the Norsworthy criteria are met,

Commented [A2]: From Kimberly: OK with this deletion. Could we add contain? Consisted in Decision Doc. Tier 2

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Commented [A3]: From Kimberly To Bayer – Why this deletion? We may be able to help gain access, or provide information through other contacts or mechanisms. Please propose alternate language re: notifying of us denial of access.

Commented [A4]: For discussion

Commented [A5]: From Kimberly To Bayer: We feel Bayer has a responsibility to stay up to speed on this issue and seek out this information. Please rephrase.

Commented [A6]: From Kimberly: We feel it's critical that this be reported to state extension. Why the deletion? This seems easy to implement.

Commented [A7]: No longer need to confirm – but still need to investigate

Commented [A8]: We strongly feel that you should keep this to be actively involved with addressing control failures

[1] The Norsworthy "likely herbicide resistance" criteria are: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; or (2) a

spreading patch of uncontrolled plants of a particular weed species; or (3) surviving plants mixed with controlled individuals of the same species. The identification of any of these criteria in the field indicates that "likely herbicide resistance" is present.

and prior to any application of alternative control practices, Bayer must ~~request that the~~ grower provide Bayer access to the relevant field(s) to collect sufficient specimens of the likely resistant weeds (potted specimens or seeds) to be able to effectively ~~statistically~~ evaluate the ~~potentially~~ suspected resistant weeds for resistance for further evaluation in the greenhouse or laboratory. Alternately, Bayer may request that the grower or user provide such specimens, at Bayer's expense. If access is granted, Bayer must promptly collect samples of the ~~likely~~ suspected resistant weeds if available.

If viable specimens have been collected, Bayer must commence greenhouse or laboratory studies to confirm whether resistance is present as soon as practicable following sample collection~~:~~.

~~a. If permitted by the grower, Bayer must contact or visit the grower no earlier than 2 weeks and no later than 4 weeks after implementation of the additional weed control measures in order to evaluate success of such measures; and~~

~~b. If the additional weed control measures were not successful in controlling the likely resistant weeds, then the Bayer must:~~

~~i. Consult with the grower and investigate, with the grower, the reason(s) why the additional control measures were not successful;~~

~~ii. Report annually to EPA and to state and local extension agencies the inability to control the likely resistant weeds~~

~~iii. Report to growers, users, and landowners, if landowner is accessible, adjacent to the affected field the inability to control the likely resistant weeds prior to the growing season; and~~

~~iv. Offer to further assist the grower in controlling and containing the likely resistant weeds, including retreatment and/or other non-chemical controls, as appropriate.~~

~~v. Maintain a website that summarizes reports of resistance by state, county, weed species, and year resistance was confirmed.~~

B. Educational / Informational Component:

1. Bayer must develop, annually update, provide to EPA ~~and state extension~~, and implement an education program for growers and users that includes the following elements:
   a. The education program shall identify appropriate best management practices (BMPs), set forth under the "Best Management Practices (BMPs) Component," below, to ~~avoid,~~ delay, contain, and/or control weed resistance, and shall convey to growers the importance of complying with BMPs;
   b. The education program shall include at least one written communication regarding herbicide resistance management each year, directed to users of XtendiMax with VaporGrip Technology for use over-the-top on dicamba tolerant soybean or cotton ~~as well as all purchasers of DT seed, if Bayer also sells DT seed. This written communication must accompany the purchase of seed bags~~; and
   c. Bayer must transmit the BMPs to all ~~purchasers of DT (if applicable) seed and~~ users of XtendiMax with VaporGrip Technology. In addition to the other requirements of these Terms and Conditions, this transmittal must describe to growers and users the commitments as described in section A5 about investigations of suspected dicamba-resistant weeds.

Commented [A9]: From Kimberly: Critical.

d. All Bayer herbicide sales representatives ~~(of both seed and herbicides)~~ must have immediate access

Commented [A10]: From Kim: Why not the seed? Isn't this critical for making sure that the folks buying the seed aren't using the wrong Dicamba?

to the education program for distribution to growers, users, extension agents, neighboring landowners, and any other interested stakeholder.

e. The education program must include information about how to determine the appropriate buffers so that users have a better understanding what constitutes a buffer on his/her field(s), and recommendations for weed control practices in buffer zones. The education program must also include information on determination of sensitive areas and cutoff date restrictions.
f. Provide training on the use of broadcast hooded sprayers (e.g., what qualifies as hooded sprayer, appropriate uses, manufactures).
g. Training for sprayer cleanouts (before and after spraying as indicated on labels).
h. Training for Bulletins Live 2!.
i. Training on updated record keeping requirements.
j. Training should be modified to clearly prohibit the use of the dicamba products not intended for use on DT crops formulation for all application timings.
k. Training on the use of newly required pH buffering adjuvants (volatility-reduction adjuvants) and/or drift reduction adjuvants.
l. Training on how users/growers can report incidents and control failure to EPA and states.
m. Provide to EPA the original education program for dicamba users within three months of the issuance of this registration. ~~Provide to EPA copies of educational materials provided to seed purchasers.~~ Provide the educational materials to states that provide their own training. Provide any other stakeholder with educational materials upon request.

C. Evaluation Component:

1. Bayer will annually conduct a survey directed to users of XtendiMax with VaporGrip Technology ~~and growers planting dicamba tolerant seed~~ for use over-the-top of dicamba tolerant soybean or cotton. This survey must be based on a statistically representative sample. The sample size and geographical resolution should be adequate to allow analysis of responses within regions, between regions, and across the United States. ~~Bayer must submit the draft survey to EPA as well as the survey results.~~ This survey shall evaluate, at a minimum, the following:
   a. Growers' and users' adherence to the terms of the XtendiMax with VaporGrip Technology Use Directions and Label Restrictions, if XtendiMax with VaporGrip Technology is used, and
   b. Whether growers have encountered any perceived issue with non-performance or lack of efficacy of XtendiMax with VaporGrip Technology and, if so, how growers have responded.
   ~~c. Whether growers have reported any issues with non-performance or lack of efficacy of XtendiMax with VaporGrip Technology and how the company representatives have responded~~
   ~~d. A question asking about awareness of public reports of resistance (e.g., any awareness of popular press or industry publications on dicamba resistance or suspected resistant biotypes).~~
   ~~e. A question directed asking about awareness of personal/neighbor reports of resistance.~~
   ~~f. Application practices for dicamba product applied (rate, time, amount, etc…) to the fields planted with traited seed.~~

Commented [A11]: there would be a low does exposure and having adequate weed control options available could help controlling weeds potentially exposed to low doses and help delay resistance

Commented [A12]: This would potentially minimize drift (low dose exposure) on buffers and therefore be helpful for HRM

Commented [A13]: Low dose exposure is related and HRM

Commented [A14]: See addion

Commented [A15]: From Kimberly: Why not?

Commented [A16]: Requires further discussion – seems to be about label training but is in the Herbicide Resistant Management Plan.

Commented [A17R16]: Many of the components are also related to HRM and is important to product stewardship

Commented [A18]: They need to provide stewardship of the seed as well.

Commented [A19]: This is important to have informative information for better decisions in the future

Commented [A20]: Deleted because survey will cover the recommendation provided and share high level summary as in the past Also see D-1(b) which suggest reporting only the result and not draft survey.
Also note that starting from 2020, combined grower survey with all registrants.

Commented [A21]: This is about information sharing and awareness-raising, stewardship, responsibility – it is important

2. Utilize the results from the survey described in paragraph 1 of this section to annually review, and modify as appropriate for the upcoming growing season, the following elements of Bayer's resistance management plan:
   a. Efforts aimed at achieving adoption of BMP's;
   b. Responses to incidents of likely resistance and confirmed resistance; and
   c. The education program and effectiveness of information dissemination. At the initiative of either EPA or Bayer, EPA and Bayer shall consult about possible modifications of the education program.

3. Bayer must annually report to EPA any changes to its resistance management plan made in response to survey results as provided in section D.1. above.

D. Reporting Component:

1. Submit annual reports to EPA by January 15 (beginning January 15, 2022) and final report with all then available information due September 30, 2025~~by September 30 of each year, beginning on September 30, 2021~~. Such reports shall include:
   a. Annual sales of XtendiMax with VaporGrip Technology by state and, if applicable, annual sales of (traited seed) by state, which shall be treated by EPA as confidential business information;
   b. The first annual report shall include the current education program and associated materials, and subsequent annual reports shall include updates of any aspect of the education program and associated materials that have materially changed since submission of the previous annual report, along with results of the survey as described in section C of this document;
   c. Summary of your efforts aimed at achieving implementation of BMP's by all growers and users;
   d. Summary of your determinations as to whether each reported lack of herbicide efficacy was "likely resistance," your follow-up actions taken, and, if available, the ultimate outcome (e.g., evaluation of success of additional weed control measures) regarding each case of "likely resistance." In the annual report, Bayer must list the cases of likely resistance by county and state.
   e. The results of the annual survey described in paragraph 1 under "Evaluation Component," above, including the extent to which growers are implementing herbicide resistance BMPs, and a summary of your annual review and possible modification – based on that survey – of the education program, , and response to reports of likely resistance, described in paragraph 2 under "Evaluation Component," above; and
   f. Summary of the status of any laboratory and greenhouse testing conducted pursuant to section A.5.c. following up on incidents of likely resistance, performed in the previous year. Data pertaining to such testing must be included in the annual reports and made available to the public on a public HRM Website.
   g. Report how many training sessions Bayer conducted, identifying the dates, locations, and numbers of individuals trained per session. If Bayer supported or partnered with other entities to provide training, report the names of the entities and the number of training sessions conducted by each, identifying the dates, locations, and numbers of individuals trained per session

Following your submission of the annual report, you shall meet with the EPA at EPA's request in

Commented [A22]: From Kimberly – Agreed.

Commented [A23]: add on an HRM Website to both this, and the note above. This could help to satisfy need for awareness raising

order to evaluate and consider the information contained in the report.

E. Best Management Practices (BMPs) Component:

1. Best management practices (BMPs) must be identified in your education program. Growers and users must be advised of BMP's in product literature, educational materials and training. Bayer's transmittal of the BMPs must also describe to growers the commitments in this section of this document. Such BMPs must direct growers and users to scout fields before application to ensure proper weed identification and after application to confirm herbicide effectiveness, and that growers and users should report any incidence of lack of efficacy of this product against a particular weed species to Bayer or a Bayer representative.
2. The following are the additional elements and information that must be included in these BMPs:
   a. Regarding crop selection and cultural practices:
      i. Understand the biology of the weeds present.
      ii. Use a diversified approach toward weed management focused on preventing weed seed production and reducing the number of weed seeds in the soil seed-bank.
      iii. Emphasize cultural practices that suppress weeds by using crop competitiveness.
      iv. Plant into weed free fields, keep fields as weed free as possible, and note areas where weeds were a problem in prior seasons.
      v. Incorporate additional weed control practices whenever possible, such as mechanical cultivation, biological management practices, crop rotation, and weed-free crop seeds, aspart of an integrated weed control program.
      vi. Do not allow weed escapes to produce seeds, roots or tubers.
      vii. Manage weed seed at harvest and post-harvest to prevent a buildup of the weed seed-bank.
      viii. Prevent field-to-field and within-field movement of weed seed or vegetative propagules.
      ix. Thoroughly clean plant residues from equipment before leaving fields.
      x. Prevent an influx of weeds into the field by managing field borders.
      xi. Fields must be scouted before application to ensure that herbicides and application rates will be appropriate for the weed species and weed sizes present.
      xii. Fields must be scouted after application to confirm herbicide effectiveness and to detect weed escapes.
      xiii. If resistance is suspected, treat weed escapes with an alternate mode of action or use non-chemical methods to remove escapes.
   b. Regarding herbicide selection:
      i. Use a broad spectrum soil applied herbicide with a mechanism of action that differs from this product as a foundation in a weed control program.
      ii. A broad spectrum weed control program should consider all of the weeds present in the field. Weeds should be identified through scouting and field history.
      iii. Difficult to control weeds may require sequential applications of herbicides with alternative mechanisms of action.
      iv. Fields with difficult to control weeds should be rotated to crops that allow the use of herbicides with alternative mechanisms of action.
      v. Apply full rates of this herbicide for the most difficult to control weed in

the field. Applications should be made when weeds are at the correct size to minimize weed escapes.

~~vi. Do not use more than two applications of this herbicide or any herbicide with the same mechanism of action within a single growing season unless mixed with another mechanism of action herbicide with overlapping spectrum for the difficult to control weeds.~~

vii.vi. Report any incidence of lack of efficacy of this product against a particular weed species to Bayer or a Bayer representative.

Commented [A24]: this is another Tier 1 issue: multiple effective MOA, especially in areas with confirmed resistance – we would be open to adjusting the language to rotating/alternating between MOAs- but the concept is essential to HRM